



United States
Department of
Agriculture

Forest
Service

Northeastern Area
State & Private
Forestry

180 Canfield Street
Morgantown, WV 26505-3101

File Code: 3400

Date: January 9, 2004

Glenn Carowan, Refuge Manager
USDI Fish and Wildlife Service
Chesapeake Marshlands National Wildlife Refuge Complex
2145 Key Wallace Drive
Cambridge, MD 21613

Dear Glenn:

From October through December of 2003, USDI Fish and Wildlife Service personnel and USDA Forest Service personnel conducted a gypsy moth egg mass survey at Chesapeake Marshlands National Wildlife Refuge Complex (CMNWRC). The purposes of this survey were to evaluate the efficacy of the 2003 suppression project and to assess the potential for defoliation and the need for treatment in 2004.

The survey area consisted of all areas that were treated in 2003 and in stands that were previously identified as being fair or good fox squirrel habitat with a moderate or high potential for gypsy moth defoliation. The 48 stands that were surveyed are presented in Figure 1.

Within each stand, gypsy moth survey plots were randomly selected based upon available host trees (oak species), size of sample area and uniformity between egg mass counts. At each sample point, a 1/40th acre fixed radius plot was established. The plots consisted of a tally of all the new (2003) egg masses observed on the overstory trees, understory vegetation, ground litter and duff. The total number of new egg masses observed for each plot was multiplied by 40 to determine the number of egg masses per acre. Egg mass length was measured to determine the overall "health" of the existing population.

The location of the survey plots are shown in Figures 2a-2d and the survey results are summarized in Table 1. Overall egg mass densities ranged from 0-560 and averaged 7 egg masses per acre. Egg mass length at CMNWRC tended to be small in size, averaging 18 mm and ranging from 15-20 mm. Egg masses shorter than 25 mm typically indicate an unhealthy population.

The 2003 suppression project at CMNWRC totaled 800 acres and encompassed seven stands and a portion of five other stands (Figure 3). The egg mass survey results for the treated areas are summarized in Table 2. Overall, the egg mass density was reduced 99 percent from the pre-treatment level of 2,715 to the current level of 18 egg masses per acre. Also no defoliation was detected in any of these stands, or elsewhere at CMNWRC, during this aerial detection survey conducted on June 16 (see report dated July 7).

It was not expected that a suppression project using the biological insecticide Gypchek would



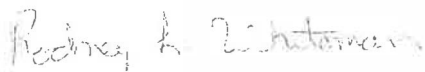
provide 100 percent foliage protection and a 99 percent gypsy moth population reduction. Based on results of previous suppression projects using Gypchek, foliage protection was expected on approximately 75 percent of the treatment area along with a gypsy moth population reduction in the 50-75 percent range. It is very likely that the results of this year's suppression project were aided by a natural decline of the gypsy moth in the area.

Since no noticeable defoliation is expected, treatment is not recommended at Chesapeake Marshlands Natural Wildlife Refuge Complex in 2004.

Please call me at (304) 285-1555 if you have any questions regarding the egg mass survey or this letter.

I would also like to thank your staff for their assistance in the egg mass survey.

Sincerely,

A handwritten signature in cursive script that reads "Rodney L. Whiteman".

RODNEY L. WHITEMAN
Forester
Forest Health Protection

Cc: Tom Eagle, Forester, CMNWRC
Allen Carter, Regional Forester, USDI F&WS
Noel Schneeberger, AO
Robert Tichenor, MDA
Steve Tilley, MDA
Dennis Souto, DFO
Mike Connor, SPFO

Table 1 – Gypsy moth egg mass survey results at Chesapeake Marshlands NWR Complex, Fall 2003

Stand 1

Plot number	Number em/acre	Plot number	Number em/acre
1	0	5	0
2	0	6	0
3	0	7	0
4	0		

em/acre average = 0

Stand 3

Plot number	Number em/acre	Plot number	Number em/acre
8	0	11	0
9	0	12	0
10	0		

em/acre average = 0

Stand 4

Plot number	Number em/acre	Plot number	Number em/acre
13	0	17	0
14	0	18	0
15	0	19	0
16	0		

em/acre average = 0

Stand 5

Plot number	Number em/acre	Plot number	Number em/acre
20	0	22	0
21	0		

em/acre average = 0

Stand 6

Plot number	Number em/acre	Plot number	Number em/acre
23	0	29	0
24	0	30	0
25	0	31	0
26	0	32	0
27	0	33	0
28	0	34	0

em/acre average = 0

Table 1 -- Gypsy moth egg mass survey results at Chesapeake
Marshlands NWR Complex, Fall 2003

Stand 7

Plot number	Number em/acre	Plot number	Number em/acre
35	0	39	0
36	0	40	0
37	0	41	0
38	0	42	0

em/acre average = 0

Stand 9

Plot number	Number em/acre	Plot number	Number em/acre
43	0	46	0
44	0	47	0
45	0	48	0

em/acre average = 0

Stand 10

Plot number	Number em/acre	Plot number	Number em/acre
49	0	51	0
50	0		

em/acre average = 0

Stand 11

Plot number	Number em/acre	Plot number	Number em/acre
52	0		

em/acre average = 0

Stand 12

Plot number	Number em/acre	Plot number	Number em/acre
53	0	58	0
54	0	59	0
55	0	60	0
56	0	61	0
57	80	62	0

em/acre range = 0-80

em/acre average = 8

Stand 13

Plot number	Number em/acre	Plot number	Number em/acre
63	0	65	0
64	0	66	0

em/acre average = 0

Table 1 – Gypsy moth egg mass survey results at Chesapeake
Marshlands NWR Complex, Fall 2003

Stand 21

Plot number	Number em/acre	Plot number	Number em/acre
67	0	69	0
68	0		

em/acre average = 0

Stand 23

Plot number	Number em/acre	Plot number	Number em/acre
70	0	71	0

em/acre average = 0

Stand 24

Plot number	Number em/acre	Plot number	Number em/acre
72	0	73	0

em/acre average = 0

Stand 25

Plot number	Number em/acre	Plot number	Number em/acre
74	0	76	0
75	0	77	40

em/acre range = 0-40

em/acre average = 10

Stand 26

Plot number	Number em/acre	Plot number	Number em/acre
78	200	80	0
79	0	81	0

em/acre range = 0-200

em/acre average = 50

Stand 27

Plot number	Number em/acre	Plot number	Number em/acre
82	0	83	0

em/acre average = 0

Stand 28

Plot number	Number em/acre	Plot number	Number em/acre
94	0	95	0

em/acre average = 0

Table 1 – Gypsy moth egg mass survey results at Chesapeake
Marshlands NWR Complex, Fall 2003

Stand 29

Plot number	Number em/acre	Plot number	Number em/acre
84	0	89	0
85	0	90	0
86	0	91	0
87	0	92	0
88	0	93	0

em/acre average = 0

Stand 33

Plot number	Number em/acre	Plot number	Number em/acre
96	0	97	0

em/acre average = 0

Stand 34

Plot number	Number em/acre	Plot number	Number em/acre
98	0		

em/acre average = 0

Stand 35

Plot number	Number em/acre	Plot number	Number em/acre
99	0	105	40
100	0	106	0
101	0	107	0
102	0	108	0
103	120	109	0
104	0		

em/acre range = 0- 120

em/acre average = 15

Stand 37

Plot number	Number em/acre	Plot number	Number em/acre
110	0	112	0
111	0	113	0

em/acre average = 0

Stand 39

Plot number	Number em/acre	Plot number	Number em/acre
114	0	117	0
115	0	118	0
116	0		0

em/acre average = 0

Table 1 – Gypsy moth egg mass survey results at Chesapeake
Marshlands NWR Complex, Fall 2003

Stand 40

Plot number	Number em/acre	Plot number	Number em/acre
119	0	120	0

em/acre average = 0

Stand 41

Plot number	Number em/acre	Plot number	Number em/acre
121	0	124	0
122	0	125	0
123	40	126	0

em/acre range = 0- 40

em/acre average = 7

Stand 44

Plot number	Number em/acre	Plot number	Number em/acre
127	0	129	0
128	0	130	0

em/acre average = 0

Stand 51

Plot number	Number em/acre	Plot number	Number em/acre
131	120	134	0
132	0	135	0
133	0	136	0

em/acre range = 0- 120

em/acre average = 20

Stand 56

Plot number	Number em/acre	Plot number	Number em/acre
138	0	140	0
139	0		

em/acre average = 0

Stand 57

Plot number	Number em/acre	Plot number	Number em/acre
141	0	143	0
142	0	144	0

em/acre average = 0

Stand 58

Plot number	Number em/acre	Plot number	Number em/acre
145	0	148	0
146	0	149	0
147	0	150	0

em/acre average = 0

Table 1 – Gypsy moth egg mass survey results at Chesapeake
Marshlands NWR Complex, Fall 2003

Stand 60

Plot number	Number em/acre	Plot number	Number em/acre
151	0	153	0
152	0		

em/acre average = 0

Stand 61

Plot number	Number em/acre	Plot number	Number em/acre
154	0	156	0
155	0	157	0

em/acre average = 0

Stand 62

Plot number	Number em/acre	Plot number	Number em/acre
158	0	162	0
159	0	163	0
160	0	164	0
161	0	165	0

em/acre average = 0

Stand 63

Plot number	Number em/acre	Plot number	Number em/acre
166	0	169	0
167	0	170	0
168	0	171	0

em/acre average = 0

Stand 64

Plot number	Number em/acre	Plot number	Number em/acre
172	0	175	0
173	0	176	0
174	0	177	0

em/acre average = 0

Stand 65

Plot number	Number em/acre	Plot number	Number em/acre
178	0	181	0
179	0	182	0
180	0	186	0

em/acre average = 0

Table 1 – Gypsy moth egg mass survey results at Chesapeake
Marshlands NWR Complex, Fall 2003

Stand 66

Plot number	Number em/acre	Plot number	Number em/acre
184	0	190	0
185	0	191	0
186	0	192	0
187	0	193	0
188	0	194	0
189	0		

em/acre average = 0

Stand 67

Plot number	Number em/acre	Plot number	Number em/acre
195	0	200	0
196	0	201	0
197	0	202	0
198	0	203	0
199	0	204	0

em/acre average = 0

Stand 68

Plot number	Number em/acre	Plot number	Number em/acre
205	0	208	560
206	0	209	0
207	0	210	160

em/acre range = 0- 560

em/acre average = 120

Stand 69

Plot number	Number em/acre	Plot number	Number em/acre
211	0	214	0
212	0	215	0
213	0		

em/acre average = 0

Stand 70

Plot number	Number em/acre	Plot number	Number em/acre
216	0	217	0

em/acre average = 0

Table 1 – Gypsy moth egg mass survey results at Chesapeake
Marshlands NWR Complex, Fall 2003

Stand 71

Plot number	Number em/acre	Plot number	Number em/acre
218	0	221	0
219	0	222	0
220	0	223	320

em/acre range = 0- 320

em/acre average = 53

Stand 72

Plot number	Number em/acre	Plot number	Number em/acre
224	0	229	0
225	0	230	0
226	0	231	0
227	0	232	0
228	0		

em/acre average = 0

Stand 74

Plot number	Number em/acre	Plot number	Number em/acre
233	0	235	0
234	0	236	0

em/acre average = 0

Stand 75

Plot number	Number em/acre	Plot number	Number em/acre
237	0	240	0
238	0	241	0
239	0		

em/acre average = 0

Stand 76

Plot number	Number em/acre	Plot number	Number em/acre
242	0	244	0
243	0	245	0

em/acre average = 0

Stand 77

Plot number	Number em/acre	Plot number	Number em/acre
246	0	248	0
247	0	249	0

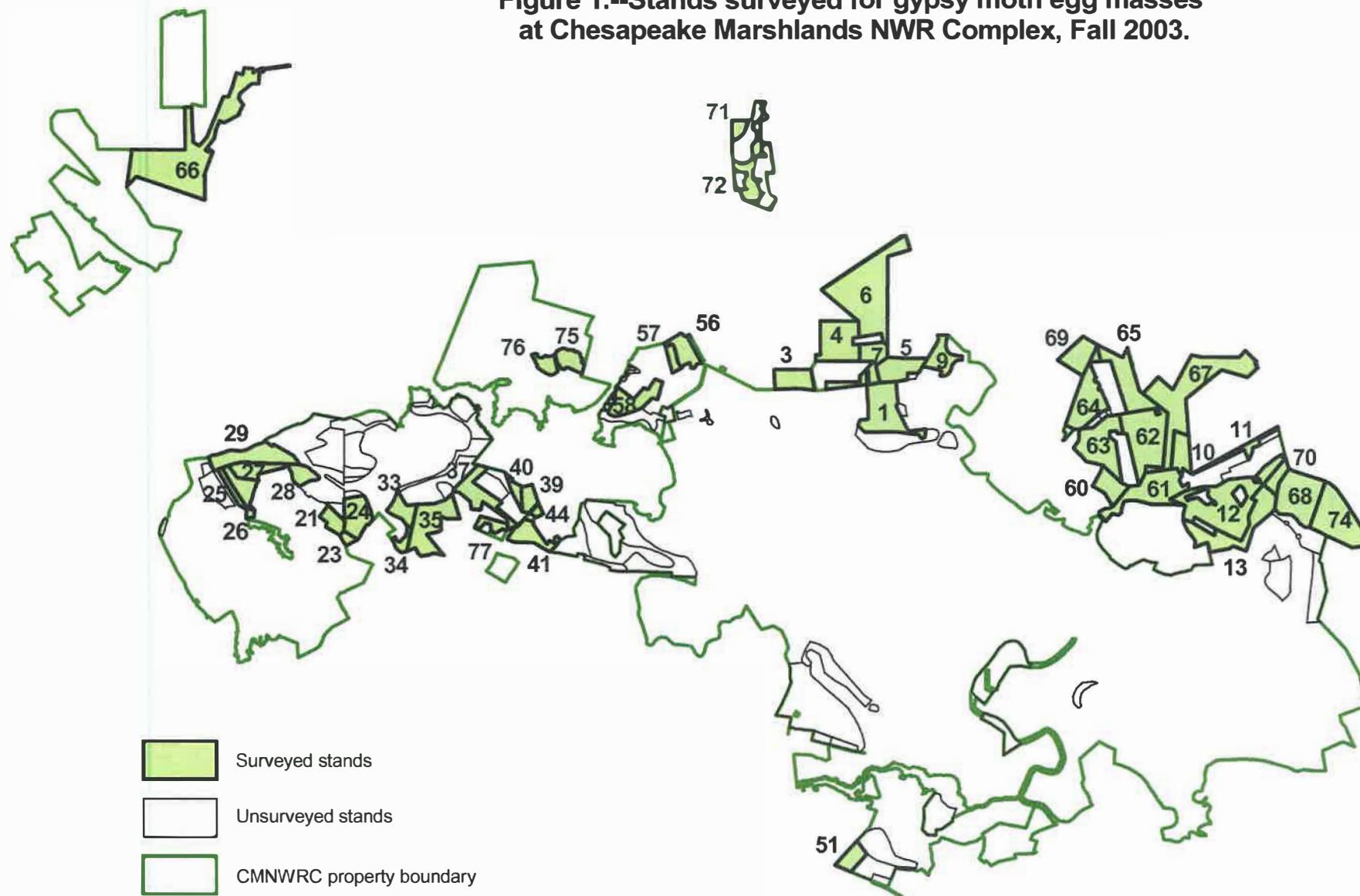
em/acre average = 0

Table 2 – Comparison of pre-treatment and post-treatment egg
Mass densities at Chesapeake Marshlands NWR Complex

Stand Number	Average em/acre 2002 (pre-treatment)	Average em/acre 2003(post-treatment)	Percent reduction
26	2,151	50	98
51	3,870	20	99
60	5,640	0	100
62	2,549	0	100
63	3,343	0	100
66	1,994	0	100
77	1,000	0	100
27*	3,520	0	100
29*	993	0	100
39*	920	0	100
68*	5,112	140	97
72*	1,493	0	100
All treated stands	2,715	18	99

* - Only portion of the stand was treated. Numbers reflect only the portion that was treated.

**Figure 1.--Stands surveyed for gypsy moth egg masses
at Chesapeake Marshlands NWR Complex, Fall 2003.**



**Figure 2a.--Gypsy moth plot locations at Chesapeake Marshlands NWR Complex, Fall 2003,
(Northern and Southern stands).**

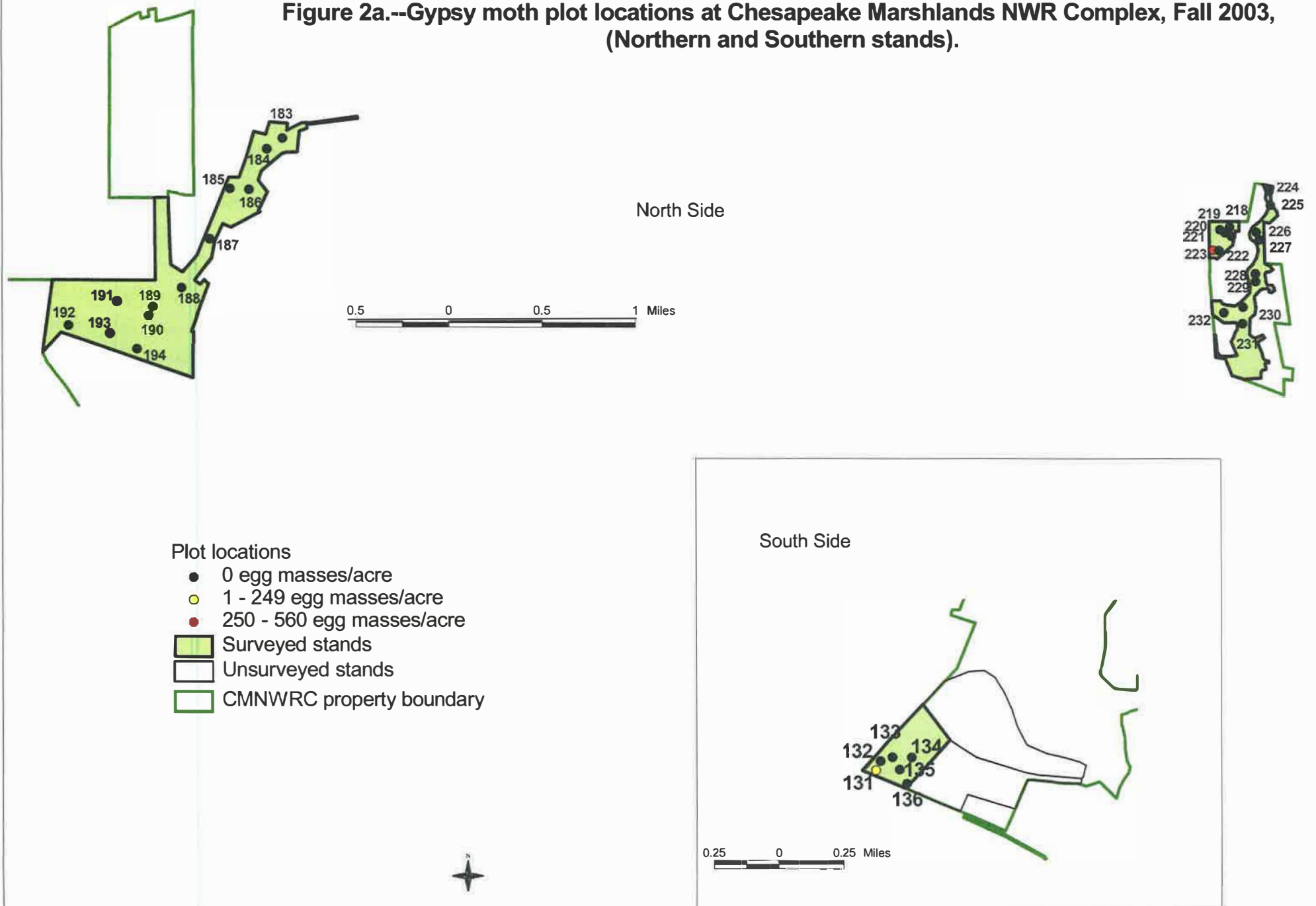


Figure 2b.--Gypsy moth plot locations at Chesapeake Marshlands NWR Complex, Fall 2003, (West Side).

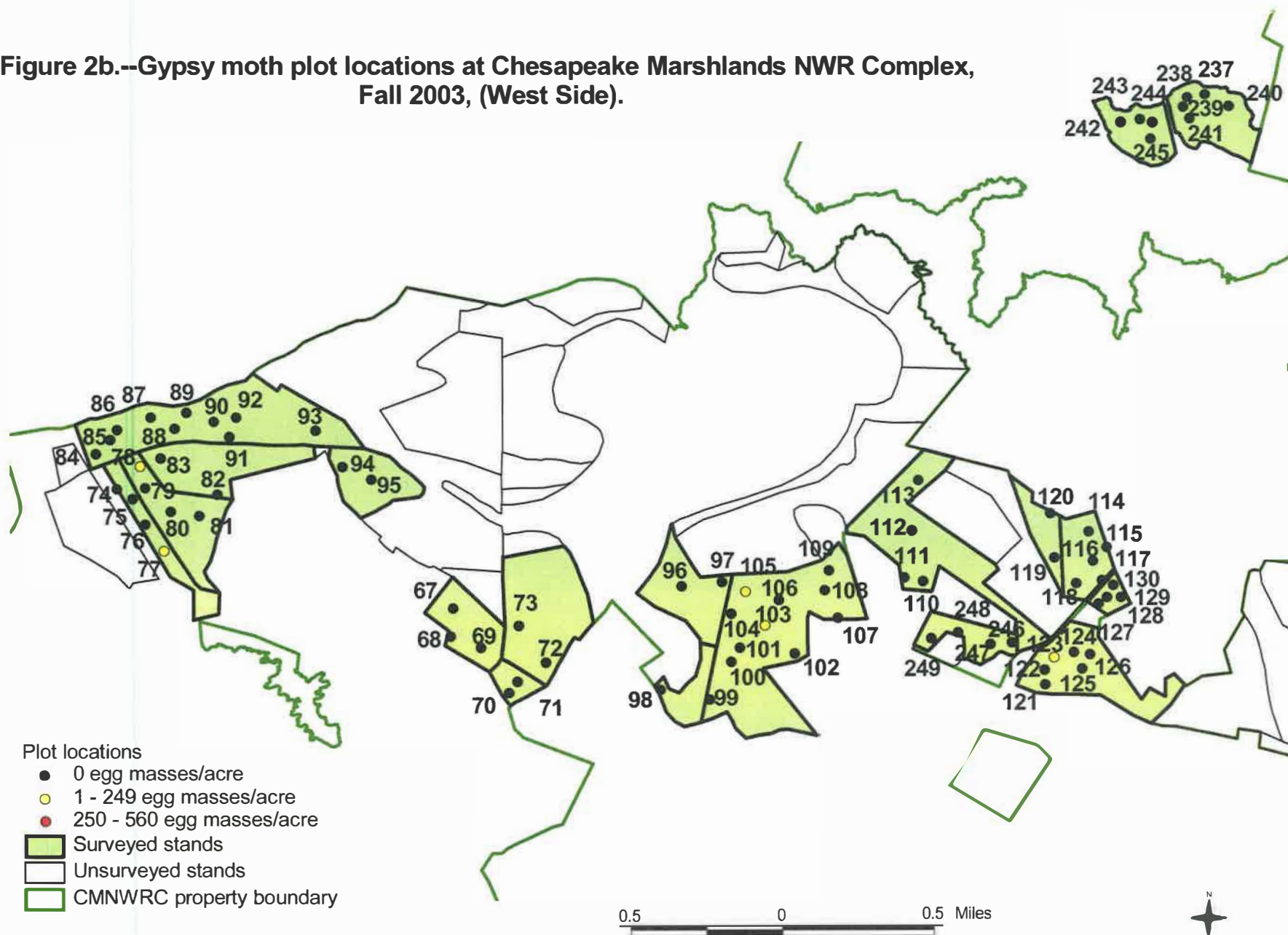


Figure 2c.--Gypsy moth plot locations at Chesapeake Marshlands NWR Complex, Fall 2003, (Center).

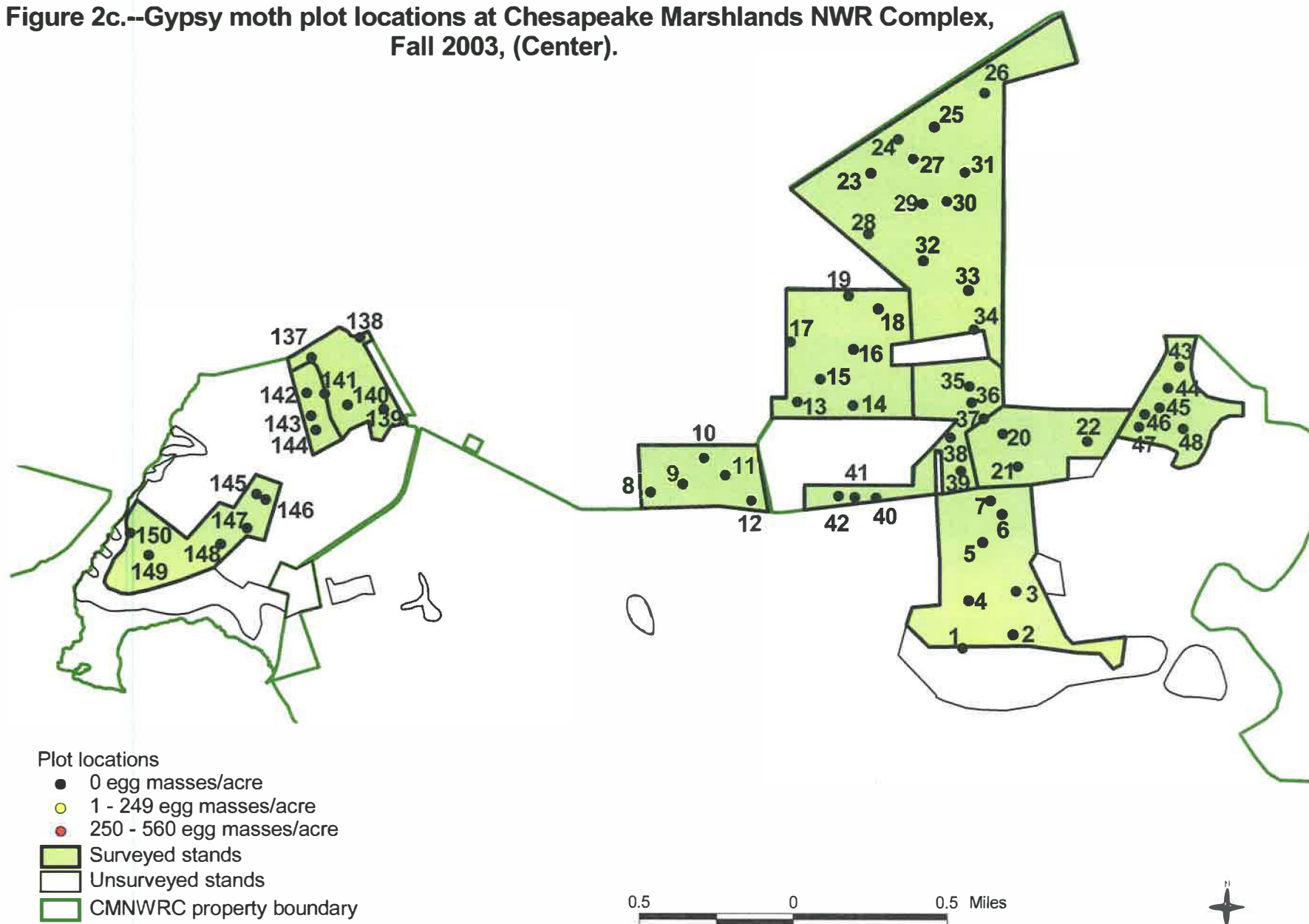
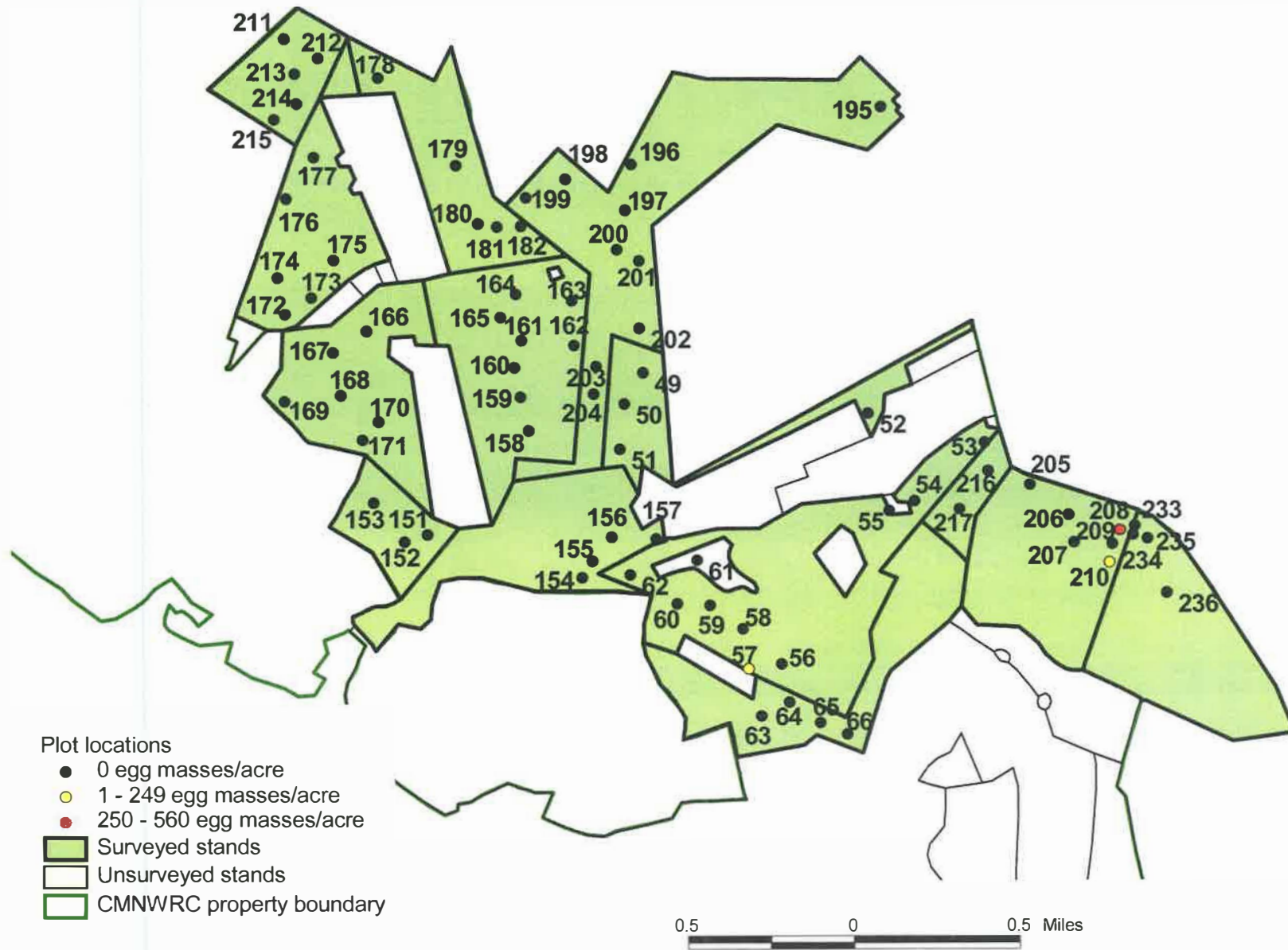


Figure 2d.--Gypsy moth plot locations at Chesapeake Marshlands NWR Complex, Fall 2003, (East Side).



**Figure 3.-- 2003 gypsy moth treatment areas at
Chesapeake Marshlands National Wildlife Refuge Complex
(800 acres) - 1 application of gypchek.**

